

November 27, 2019

Arthur Burbank
USDA Forest Service
4350 South Cliffs Dr.
Pocatello, ID 83204

**Subject: Biological Selenium Removal Treatment Technology
 Water Treatment Pilot Study
 October 2019 Progress Report**

Dear Art,

This progress report summarizes key activities in October 2019 associated with Phase 2 of the Water Treatment Pilot Study located near Hoopes Spring. This Pilot Study is being conducted as part of the Smoky Canyon Mine Remedial Investigation/Feasibility Study (RI/FS) to provide information on the effectiveness of the active biological treatment system in removing selenium and other COPCs from South Fork Sage Creek Springs and Hoopes Spring.

Work related to the approved Phase 2 Pilot Study continues at the site in accordance with the *Final Phase 2 Pilot Study Work Plan and Sampling and Analysis Plan, Ultra-Filtration/Reverse Osmosis and Biological Selenium Removal Fluidized Bed Bioreactor Treatment Technology* (Phase 2 WP/SAP).

Identification of Deliverables and Data Transmittals

There were no outstanding deliverables or transmittals for the month of October. At the time of this report, we have received laboratory data for Weeks 86 and 88. Preliminary laboratory data are presented in Table 1. The field data for the Weeks 86 and 86 sampling events is summarized in Table 2.

Completed Activities

The following activities associated with the Phase 2 Pilot Study were completed in October 2019:

- Continued system operation and treatment of selenium.

The Treatment System Pilot (TSP) influent total selenium concentration for Week 86 was 175 ug/L and Week 88 was 164 ug/L. The Treatment System Pilot effluent total selenium concentration for Week 86 was 29.6 ug/L and Week 88 was 26.1 ug/L. The average removal efficiency for October was approximately 83.5% for total selenium removal.

The average flow of the TSP for the month of October was 1,668 gpm. Since full scale operations began in early December 2017 approximately 1.562 billion gallons of impacted water has been treated. The mass of selenium removed from December 2017 through October 2019 is approximately 1,635 pounds.

Upcoming Activities

The following activities associated with the Phase 2 Pilot Study are planned through October 2019:

- Continue system monitoring in accordance with the sampling and analysis plan.

Please contact me if there are questions regarding this monthly progress report.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeffrey Hamilton", with a long, sweeping horizontal line extending to the right.

Jeffrey Hamilton
Environmental Engineer

cc:

Arthur Burbank – USFS, 410 East Hooper, Soda Springs, ID 83276
Sherri Stumbo – USFS, 4350 South Cliffs Dr., Pocatello, ID 83204
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Delmer Cunningham – J.R. Simplot Company, email only
Andy Koulermos – Formation Environmental, email only
Lily Vagelatos – Formation Environmental, email only
Jeremy Aulbach – Brown and Caldwell, email only

Table 1
Laboratory Results Focused Analyte List

Hoopes Springs Water Treatment Plant Pilot Study
Phase 2, Performance Monitoring

		Week 86			Week 88		
Station >>		Influent	Ultra Filtration Backwash	Effluent	Influent	Ultra Filtration Backwash	Effluent
Sample ID >>		SC1019-LSSHS-IN001	SC1019-LSSHS-UFB001	SC1019-LSSHS-EF001	SC1019-LSSHS-IN002	SC1019-LSSHS-UFB002	SC1019-LSSHS-EF002
Date >>		10/9/2019			10/23/2019		
Analyte	Units						
General Chemistry							
Ammonia, as N	mg/L	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Biochemical Oxygen Demand	mg/L	2 U	2 U	2 U	2 U	2 U	2 U
TSS	mg/L	2 U	2 U	2 U	2 U	2 U	2 U
Nutrients							
Nitrate, as N	mg/L	0.36	0.23	0.65	0.41	0.11	0.51
Sulfide	mg/L	1 U	1 U	1 U	1 U	1 U	1 U
Phosphorus, Total	mg/L	0.03	0.0885	0.488	0.0636	0.0201	0.208
Metals and Metalloids							
Selenium, Dissolved	mg/L	0.172	0.0811	0.0267	0.173	0.0254	0.0278
Selenium, Total	mg/L	0.175	0.0841	0.0296	0.164	0.0245	0.0261

Notes

Results presented are preliminary, and have not been validated at the time of this report.

U - Analyte not detected above the method detection limit (MDL).

J - Result is estimated.

Table 2
Field Water Quality Data

Hoopes Springs Water Treatment Plant Pilot Study
Phase 2, Performance Monitoring

		Parameter >>	Dissolved Oxygen	ORP	pH	SC	Temperature	Turbidity
		Units >>	mg/L	mV	SU	umhos/cm	C	NTU
Station	Sample ID	Date						
Week 86								
Influent	SC1019-LSSHS-IN001	10/9/2019	10.01	129	7.01	500	13.61	0.9
Ultra Filtration Backwash	SC1019-LSSHS-UFB001	10/9/2019	10	131	7.8	320	13.47	1.3
Effluent	SC1019-LSSHS-EF001	10/9/2019	9.44	126	7.09	540	13.16	0.7
Week 88								
Influent	SC1019-LSSHS-IN002	10/23/2019	13	204	6.93	511	13.56	1.1
Ultra Filtration Backwash	SC1019-LSSHS-UFB002	10/23/2019	10.33	142	7.62	112	13.12	1.4
Effluent	SC1019-LSSHS-EF002	10/23/2019	14.25	157	7.3	521	13.03	0.8

Notes: